

ELECTRONIC TOOL

Edit

Cell

Communication

View

Support

Window

PROBLEM ANALYSIS

Use Distinctions and Changes

▼

Problem: Flight attendants have red sweat

1

Look at the “What Object?” is/is not pair below. What is distinct (different odd, special or unique) about Flight attendants when compared to Pilots, Passengers.
Type an answer in the Distinctions cell below.
If you find another Distinction, click the Insert Distinction button, in the new cell.

What object?

Flight attendants

(The full text and intent of this question is displayed within this mouse-over.)

Is

Pilots, Passengers,
Ground Crew, Gate Agents,
Lead Flight Attendants

Is Not

Pilots, Passengers,
Ground Crew, Gate Agents,
Lead Flight Attendants

Distinctions

Demonstrate safety equipment

Insert New Distinction

2

When you can think of no other Distinction for this “Is”/“Is Not” pair, click the Next Pair button to consider the next pair, then repeat step 1.

Pair

1 of 5

Previous Pair

Next Pair

Notepad

Support

Go to Worksheet Mode

Previous Screen

Next Screen

Fig. 84

KT eThink

You've chosen to conduct a Problem Analysis. If you have a problem, and you don't know what's causing it, Problem Analysis will help you find the cause.

Before you begin the analysis, record the problem background by completing these steps:

1

Describe how the object with the problem is actually performing and how it should be performing.

2

Write a concise Problem Statement that explains what object has the problem and what the problem is.

3

Confirm that the cause of the problem is unknown.

4

Describe how the problem was discovered.

5

Record the actions to minimize the problem and any attempts to solve it.

6

Review the problem background.

Notepad

Previous Screen

Next Screen

Fig. 85

Replacement Sheet

98/149

KT eThink				<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
<div><div><div>1a How is the person, process, or thing with the problem actually performing?</div><div>?</div></div><div>Actual:</div><div></div></div> <div><div><div>1b How should the person, process, or thing with the problem be performing?</div><div>?</div></div><div>Should:</div><div></div></div>					
	Notepad		Previous Screen		Next Screen

Fig. 86

KT eThink

Refer to your Should and Actual information to answer the following questions.

Should:

Actual:

2a

What equipment, system, product, process, or person has the problem? Briefly describe the object that has the problem.

Object:

2b

What's the difference between what should be happening and what's actually happening? Briefly describe the deviation the object is experiencing.

Deviation:

Your Problem Statement describes the object and the deviation. If necessary, edit the statement so that it can be easily understood by anyone in your organization.

Problem Statement

Notepad

Previous Screen

Next Screen

Fig. 87

Replacement Sheet

100/149


KT eThink				<input type="checkbox"/> <input type="checkbox"/> X	
3 Do you know what's causing ?					
					
<div><div><div>No, I'm not certain. Continue the PA.</div><div><div><input type="radio"/> Yes, but I need to choose a way to fix it.</div><div><input type="radio"/> Yes, but I need to make a plan for fixing it.</div><div><input type="radio"/> Yes, but I can't fix it until I find out what's causing the cause.</div><div><input type="radio"/> Yes, but I want to continue this PA anyway.</div></div></div></div>					
	Notepad		Previous Screen		Next Screen

Fig. 88

Replacement Sheet

101/149

KT eThink				<input type="checkbox"/> <input type="checkbox"/> X	
<div><div><div>4 How was discovered? Record any information you know about how the problem was discovered and who discovered it.</div><div><div><div>?</div></div></div></div><div>How was the problem discovered:</div><div></div></div>					
	Notepad		Previous Screen		Next Screen

Fig. 89

KT eThink

?

5a What can you do to minimize the problem? List actions that need to be taken to contain the problem until the cause can be found. If you've already taken action, record those actions here. Who is responsible for completing each action? Assign a person or group to each action.

Actions to minimize the problem

Person or group responsible

Date

Insert New Action

?

5b What have you done to try and solve the problem? Record any actions that have been taken.

Actions to solve the problem

Insert New Action

Notepad

Previous Screen

Next Screen

Fig. 90

Replacement Sheet

103/149

KT eThink		<input type="checkbox"/> <input type="checkbox"/> X	
<div><div>6 Here's the information you listed as background for your problem. It may include information about the problem that you entered in another process. Is this a complete and accurate record of the problem background? Do you want to add any information? If so, edit the problem background here.</div><div><div>Actual:</div><div></div><div>Should:</div><div></div><div>Do you know what's causing the problem?</div><div></div><div>How was the problem discovered?</div><div></div></div></div>			
	Notepad	Previous Screen	Next Screen

Fig. 91

KT eThink

In order to find the cause of the problem you'll need to describe four aspects of it: What, Where, When, and Extent. First you'll describe what the problem is by following these steps:

1

Record what specific object has the deviation.

2

Record what similar objects could have the problem, but do not.

3

Record the specific deviation.

4

Record what similar deviations the object could have, but does not.

5

Review your "What" data, making sure it's complete and specific.

Notepad

Previous Screen

Next Screen

Fig. 92

Replacement Sheet

105/149

KT eThink		
<div>1 What specific person, system, or thing is experiencing the deviation? In your problem statement, you described the object as . If possible, revise your description to make it more specific and complete.</div>		
What object?	Is	
<div>Insert New Is</div>		
Notepad	Previous Screen	Next Screen

Fig. 93

KT eThink

2

What person, system, or thing could also have, but does not? In the Is Not cell, list objects that are similar to, but are not experiencing the deviation.

?

What object?

Is	Is Not

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 94

Replacement Sheet

107/149

KT eThink		
<div><div><div><div>3</div><div>What exactly is the deviation? In your problem statement, you described the deviation as. If possible, revise your description to make it more accurate and complete.</div></div><div><div>What deviation?</div><div>Is</div><div></div></div></div><div><div>Insert New Is</div></div></div>		
	Notepad	Previous Screen Next Screen

Fig. 95

KT eThink

4

What other deviations could reasonably be experiencing, but is not? In the Is Not cell, record conditions similar to that you might expect to see, hear, feel, taste, smell, or measure on the object.

?

What deviation?

Is

Is Not

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 96

Replacement Sheet

109/149

KT eThink

5

Review your What data. Can you make it more specific? Do you need to add more? If so, revise your data now.

	Is	Is Not
What object?		
What deviation?		

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 97

KT eThink

You've described what the problem is. Now, you'll describe where the problem is located by completing these steps:

1

Record the physical location where the object is observed when it has the deviation.

2

Record other physical locations where the object has been when it did not have the deviation.

3

Record where the deviation is on the object.

4

Record locations on the object where the deviation could be, but is not.

5

Record your Where data, making sure it's complete and specific.

Notepad

Previous Screen

Next Screen

Fig. 98

Replacement Sheet

111/149

KT eThink		
<div><div><div>1</div><div>Where is when it has ? Record the specific physical locations where the object is located when it has the deviation.</div><div>?</div></div></div>		
<div><div>Where geographically?</div><div>Is</div><div></div></div>		
<div>Insert New Is</div>		
	Notepad	Previous Screen
		Next Screen

Fig. 99

KT eThink

2

Where besides could have been located? Record the places or identical objects have been or could have been located when they did not have the deviation.

Where geographically?

Is

Is Not

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 100

Replacement Sheet

113/149

KT eThink			
<div><div><div><div>3</div><div>Where is located on ? Record all the places on the object where the deviation can be seen, smelled, felt, heard, tasted, or measured.</div><div>?</div></div></div></div>			
Where on the object?		Is	
<div>Insert New Is</div>			
	Notepad	Previous Screen	Next Screen

Fig. 101

Replacement Sheet

114/149

KT eThink

4

Where besides could be located on the ? Record places on the object where you could reasonably expect to see the deviation, but do not.

?

Where on the object?

Is

Is Not

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 102

Replacement Sheet

115/149

KT eThink

5

Review your Where information. Can you make your data more specific? Do you need to add any data? If so, revise your data now.

?

	Is	Is Not
Where geographically?		
Where on the object?		

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 103

Replacement Sheet

116/149

KT eThink	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> X
<hr/>		
<hr/>		
<hr/>		
<p>You just described the location of the object. Now, describe when the problem occurred by following these steps:</p>		
<ol style="list-style-type: none"> <li style="margin-bottom: 15px;"> ✍️ Record when the problem was first noticed. <li style="margin-bottom: 15px;"> ✍️ Record the times when the problem could have been noticed first, but was not. <li style="margin-bottom: 15px;"> ✍️ Record the times the problem has occurred since the first time it happened. <li style="margin-bottom: 15px;"> ✍️ Record the times after the first occurrence when the problem could have happened, but did not. <li style="margin-bottom: 15px;"> ✍️ Record the event in the objects <u>life cycle</u> that was happening when the problem first occurred. <li style="margin-bottom: 15px;"> ✍️ Record the events in the objects life cycle that could have been happening when the problem first occurred. Review your <u>When</u> data. <li style="margin-bottom: 15px;"> 7 		
	Notepad	Previous Screen Next Screen

Fig. 104

KT eThink

1

When did you first notice that ? Record the time and date the deviation first occurred.

?

When first?

Is

Insert New Is

Notepad

Previous Screen

Next Screen

Fig. 105

KT eThink

2

What times before or after could you have first noticed that? Record other dates and times when the problem could have happened first.

When first?

Is

Is Not

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 106

KT eThink

3a

When since has happened? Record the dates and times the deviation occurred after the first time it was noticed.

?

When since?

Is

3b

How often does happen? Determine whether the deviation happens continuously, periodically, or sporadically. Select pattern from the list.

What pattern?

Is

Continuously

Notepad

Previous Screen

Next Screen

Fig. 107

KT eThink

4b

When since could have occurred, but it didn't? Record the dates and times after when you might have expected to see the problem, but didn't.

?

When since?

Is

Is Not

You said the deviation is occurring in a pattern. Based on this information, the system has selected the patterns that do not describe how often the occurs. If necessary, revise the data.

What pattern?

Pattern

Is

Is Not

Continuously

☒

Notepad

Previous Screen

Next Screen

Fig. 108

Replacement Sheet

121/149

KT eThink		
<div>5 What was happening to when was first observed? Describe the event, stage, operation, or speed in the objects life cycle that was happening when you first noticed the deviation. ?</div>		
<div>When in the life cycle? Is</div>		
<div>Insert New Is</div>		
	Notepad	Previous Screen Next Screen

Fig. 109

KT eThink

6

What could have been happening to when was first observed? Describe the events, stages, functions, or speeds in the objects life cycle during which you might have expected to first notice the deviation but didn't.

When in the life cycle?

Is

Is Not

Insert New Is

Notepad

Previous Screen

Next Screen

Fig. 110

Replacement Sheet

123/149

KT eThink

7

Review your "When" information. Can you make your data specific? Do you need to add any data? If so, revise it now.

?

	Is	Is Not
When first?		
When since?		
What pattern?		
When in the life cycle?		

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 111

KT eThink

You described when the problem occurred. Now, you'll describe the extent of the problem by completing these steps:

1

Record the number of objects that have the deviation.

2

Record the number of objects that could have the deviation, but do not.

3

Record the size of the deviation.

4

Record what the size of the deviation could be, but is not.

5

Record how many deviations are on a single object.

6

Record how many deviations could be on a single object, but are not.

7

Review your Extent data.

Notepad

Previous Screen

Next Screen

Fig. 112

KT eThink		<div><div></div><div></div><div></div></div>	
<div><div><div>1a</div><div>How many have ? Record the total number, the percentage, or both.</div><div>?</div></div><div><div>How many objects?</div><div>Is</div><div></div></div></div>			
<div><div><div>1b</div><div>Is the number of with increasing, decreasing, or staying the same? Select the one that best describes the trend.</div></div><div><div>What is the trend in number of objects?</div><div>Is</div><div>Increasing</div></div></div>			
Notepad		Previous Screen	Next Screen

Fig. 113

KT eThink

2a

What could the total number of with be, but is not? Record the numbers or percentages more or less than that could be the total number of objects with the deviation.

?

How many objects?

Is

Is Not

2b

You said the number of with the deviation is. Based on this information, the system selected trends that do not describe the change in the number of objects with the deviation. If necessary, revise the data.

What is the trend in number of objects?

Is

Is Not

Increasing

Notepad

Previous Screen

Next Screen

Fig. 114

KT eThink

?

3a What is the size of a single? Record the size or range of sizes.

What size?

Is

Insert New Is

3b Is the size of the increasing, decreasing, or staying the same? Select the one that best describes the trend.

What is the trend in the size?

Is

Increasing

Notepad

Previous Screen

Next Screen

Fig. 115

KT eThink

4a

What other sizes could the be, but is not? Record the sizes or range of sizes more or less than.

?

What size?

Is

Is Not

4b

You said the size of the, is. Based on this information the system selected trends that do not describe the change in the size of the deviation. If necessary, revise the data.

What is the trend in the size?

Is

Is Not

Increasing

Notepad

Previous Screen

Next Screen

Fig. 116

KT eThink

5a

How many are on each ? Record the number or range.

How many deviations?

Is

Insert New Is

5b

Is the number of deviations on each object increasing, decreasing, or staying the same? Select the one that best describes the trend.

What is the trend in deviations?

Is

Increasing

Notepad

Previous Screen

Next Screen

Fig. 117

KT eThink

6a

What could be the total number of on each, but is not? Record the number of deviations more or less than that you could see, but don't.

How many deviations?

Is

Is Not

6b

You said the number of per is. Based on this information, the system selected trends that do not describe the change in the number of deviations on each object. If necessary, revise the data.

What is the trend in deviations?

Is

Increasing

Is Not

Notepad

Previous Screen

Next Screen

Fig. 118

Replacement Sheet

131/149

KT eThink

7

Review your Extent data. Can you make your data more specific? Does any data need to be added? If so, revise it there.

	Is	Is Not
When in the life cycle?		
How many objects?		
What is the trend in number of objects?		
What size?		
What is the trend in the size?		
How many deviations?		

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 119

Replacement Sheet

132/149

KT eThink

Review your Problem Specification. Does it accurately describe what you know about the problem?
Does anything need to be added or changed? If so, revise your data now.

	Is	Is Not
What object?		
What deviation?		
Where geographically?		
Where on the object?		
When first?		
When since?		
What pattern?		

Insert New Is/Is Not Pair

Notepad

Previous Screen

Next Screen

Fig. 120

KT eThink

You've described what the problem is, when and where it occurred, and the extent. Now, you'll identify possible causes of your problem by completing these steps:

Determine whether you Want to develop causes using Knowledge and Experience or Distinctions and Changes.

If you decide to use Knowledge and Experience

Generate possible causes using your knowledge of the problem and experience with similar problems.

Record what the size of the deviation could be, but is not.

Review your Extent data

Review your Extent data

Review your Extent data

If you decide to use Distinctions and Changes

Describe what is distinct about your "Is" data when

Record how many deviations are on a single

Record how many deviations could be on

Review your Extent data

Review your Extent data

Review your Extent data

Notepad

Previous Screen

Next Screen

Fig. 121

KT	eThink			
<div><div>1 Which method would you like to use to identify possible causes of this problem?</div><div></div></div>				
<div><div>GroupBox1</div><div><div><div><input type="radio"/> Use your knowledge of the problem and experience with past problems. Use this method if you have some ideas about what caused the problem.</div><div><input checked="" type="radio"/> Look for distinctions and changes in the "Is" and "Is Not" data. Use this method if:<ul style="list-style-type: none">• You can't think of any causes.• You have many causes and need help determining the most likely cause.</div></div></div></div>				
	Notepad	Previous Screen	Next Screen	

Fig. 122

KT eThink

2a

What is different, odd, special or unique about when compared to ? Record as many distinctions as you can think of. If you can't find a distinction, leave cell blank.

	Is	Is Not	Distinctions
What deviation?			

Insert New Is/Is Not Pair

Insert New Distinction

2b

Look for distinctions in another "Is/Is Not" pair.

Notepad

Previous Screen

Next Screen

Fig. 123

KT eThink

3a

What has changed in, on, around or about? Record each change and the date it occurred.

?

	Is	Is Not	Distinctions	Changes
What deviation?				

Insert New Is/Is Not Pair

Insert New Distinction

Insert New Change

3b

Look for changes in another distinction.

Notepad

Previous Screen

Next Screen

Fig. 124

KT eThink

4a

How could have caused ? Think about how this change could have possibly caused the deviation.
Record all the possible causes you can think of.

?

Possible Causes

Insert New Possible Cause

4b

Look for causes in another change.

If you think you've identified the true cause of the problem, click here to test possible causes.
Otherwise, click **Next Screen**

Notepad

Previous Screen

Next Screen

Fig. 125

KT eThink

5a

How could your distinction and change in combination have caused ? Review every combination of changes and record all the possible causes you can think of.

Distinctions

Changes

Possible Causes

Insert New Cause

5b

If you think you've identified the true cause of the problem, click here to test possible causes. Otherwise click **Next Screen**.

Notepad

Previous Screen

Next Screen

Fig. 126

KT eThink

6a

How could your changes in combination have caused ? Review every combination of changes. For each combination record all the possible causes you can think of.

Changes

Changes

Possible Causes

Insert New Cause

6b

If you think you've identified the true cause of the problem, click here to test possible causes. Otherwise click **Next Screen**.

Notepad

Previous Screen

Next Screen

Fig. 127

KT eThink			<div><div></div><div></div><div></div></div>		
<div><div><div><div>7a</div><div>How could cause ? Record all possible causes you can think of.</div><div><div>?</div></div></div><div><div>Possible Causes</div><div><div></div><div></div><div></div></div></div><div><div>Insert New Possible Cause</div></div></div></div>					
<div><div><div><div>7b</div><div>Look for causes in another distinction.</div></div><div><div>How could your distinction and change in combination have caused ? Review every combination of changes and record all the possible causes you can think of.</div></div></div></div>					
	Notepad		Previous Screen		Next Screen

Fig. 128

KT eThink

1

Review your Problem Specification Based on your knowledge of this problem and your experience what could have possibly caused? Record all the possible causes you can think of.

Is	Is Not	Distinctions	Changes	Possible Causes

Insert New Is/Is Not Pair

Insert New Distinction

Insert New Change

Insert New Possible Cause

Notepad

Previous Screen

Next Screen

Fig. 129

KT eThink

2

Review your possible causes. Can you think of any more causes? If so, add more now. Are there any causes that you don't want to consider? If so, discard them from the analysis.

?

	Is	Is Not
What object?		
What deviation?		
Where geographically?		
Where on the object?		
When first?		
When since?		
What pattern?		

Insert New Possible Cause

Insert New Is/Is Not Pair

Possible Causes

Notepad

Previous Screen

Next Screen

Fig. 130

KT eThink

How could your distinction and change in combination have caused? Review every combination of changes and record all the possible causes you can think of.

	Is	Is Not
What object?		
What deviation?		
Where geographically?		
Where on the object?		
When first?		
When since?		
What pattern?		

Insert New Is/Is Not Pair

Insert New Possible Cause

Discard Possible Cause

Possible Causes

Notepad

Previous Screen

Next Screen

Fig. 131

KT eThink

You described when the problem occurred. Now, you'll describe the extent of the problem by completing these steps:

1

Test possible causes against the Problem Specification and record any notes or assumptions.

2

Review your assumptions.

3

Identify the **most probable cause**.

Notepad

Previous Screen

Next Screen

Fig. 132

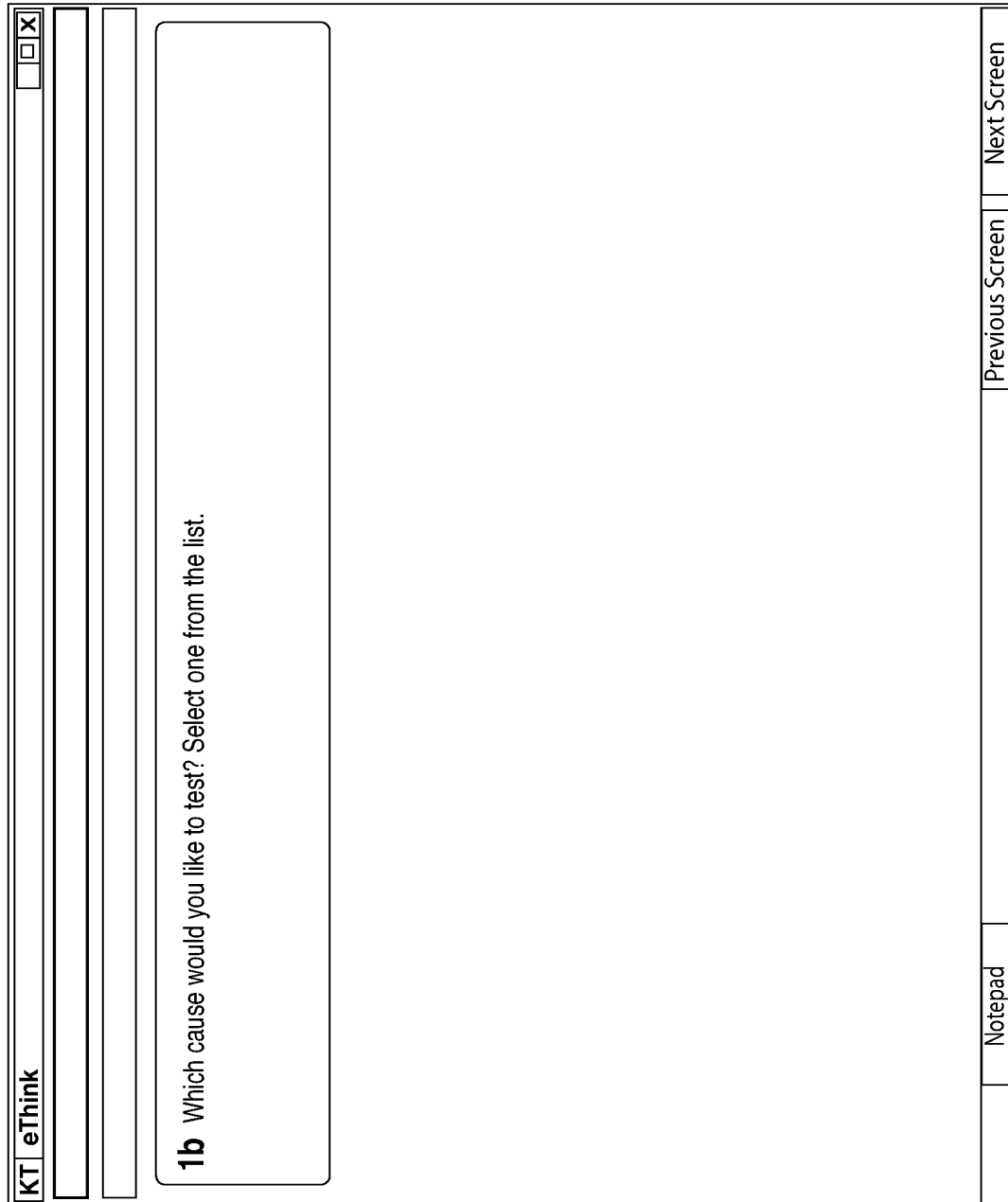


Fig. 133

Replacement Sheet

146/149

KT eThink		
<div>If is the true cause of does it explain. But not ?</div>		
Conditions	Explanations	
<div><input checked="" type="radio"/> Yes it does, because <input type="radio"/> No it does not, because <input type="radio"/> It does, but only if you assume</div>	<div><div>◀</div><div>▶</div></div>	
<div>Insert New Explanation</div>		
<div>Test the cause against another "Is/Is Not" pair</div>		
<div>Select another cause to test.</div>		
Notepad	Previous Screen	Next Screen

Fig. 134

Replacement Sheet

147/149

KT eThink

Review your assumptions. Are there any other assumptions that you should include? If so, add more now.
In addition, review your explanations of "yes" and "no" to make sure they are accurate.

Possible Causes

Explanations

Insert New Explanation

Notepad

Previous Screen

Next Screen

Fig. 135

KT eThink

3 Which possible cause best explains the data in your Problem Specification? Select the one you think is the most probable cause of the problem

Most Probable Cause	Possible Causes	Explanations
<input type="radio"/>		
<input type="radio"/>		
<input type="radio"/>		
<input type="radio"/>		

Notepad

Previous Screen

Next Screen

Fig. 136

KT eThink			<input type="checkbox"/> <input type="checkbox"/> X	
You identified the most probable cause of the problem. Now; verify that it's the true cause of the problem by following these steps:				
<div><div><div><div><div><div>1</div><div>Record actions needed to verify the true cause.</div></div><div><div>2</div><div>Once the cause has been verified, record the true cause.</div></div><div><div>3</div><div>Examine the pause to see if it has additional ramifications for your object or other objects.</div></div><div><div>4</div><div>Describe how you intend to fix the problem.</div></div><div><div>5</div><div>Examine the fix to find out what other impacts it may have.</div></div><div><div>6</div><div>Assign actions.</div></div></div></div></div></div>				
Notepad		Previous Screen		Next Screen

Fig. 137